

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-17. (canceled)

18. (currently amended) A communication network comprising at least three nodes interconnected by at least two distinct communication links and a network controller ~~control means~~ for controlling operation of ~~each node~~ all of said nodes, wherein:
each of said communication links has ~~at least~~ only two electrical conductors carrying a single communication channel;

each of said communication links connects two of said nodes and is operative to communicate in a half-duplex mode;

at least one of said nodes is couplable to a payload;

~~at least a first one~~ each of said nodes has first and second line couplers and signal transfer means controlled by said ~~control means~~ network controller for controlling transfer of data to and from each of said line couplers;

each of said line couplers is coupled to another one of said nodes by a respective one of said communication links;
and

said ~~control means~~ network controller ~~is~~ are operative for controlling said signal transfer means of ~~at least said first one~~ all of said nodes to establish a selected one of a plurality of operating modes, including: a first repeating mode that allows data to be repeated only in a direction from said first line coupler to said second line coupler; and a

second repeating mode that allows data to be repeated only from said second line coupler to said first line coupler.

19. (previously presented) The network as in claim 18, wherein another one of said operating modes is a receiving mode wherein said first one of said nodes receives data in one or more communication links.

20. (previously presented) The network as in claim 18 wherein said nodes are interconnected by said links to cause said network to have a linear topology.

21. (previously presented) The network as in claim 18, wherein said nodes are interconnected by said links to cause said network to have a circular topology.

22. (previously presented) The network as in claim 18, further comprising at least one source of electrical power distributed to said nodes via said communication links.

23. (previously presented) The network as in claim 22, wherein said electrical conductors are operative for distributing both electrical power from said source and the data communication signals.

24. (canceled)

25. (currently amended) The network as in claim 18, wherein said ~~control means~~ network controller is operative for selecting the operating mode of said first one of said nodes via signals transported by the network.

26.(currently amended) The network as in claim 18, wherein at least two of said nodes are sequentially selected to operate in a data generating mode in which data is generated in each of said at least two nodes in sequence and is transferred to only a selected one of said line couplers in each respective node.

27.(canceled)

28.(previously presented) The network as in claim 18, wherein signal transfer means of at least said first one of said nodes comprises, for repeating data received via one communication link, a repeater connected between said first and second line couplers, said repeater being controllable to repeat data in a selected direction between said first and second line couplers.

29.(currently amended) A node for distributing data communication, sensing, and control signals in a local area network, the node comprising:

a first line coupler connectable to a first communication link;

a second line coupler connectable to a second communication link;

a power supply ~~having~~ couplable to a source of electrical power; ~~and~~

a control, logic, and processing unit~~;~~

a single driver having an input; and

a single receiver having an output coupled to said single driver input,

wherein said node is mode switchable under control of said control, logic, and processing unit into a selected one of:

a first state in which said single receiver is coupled to said first line coupler for receiving a signal on the first communication link and said single driver is coupled to said second line coupler for conducting the signal to said second communication link, ~~first state that allows for~~ allowing data to be repeated without format change only in a direction from said first link to said second link, and

a second state in which said single receiver is coupled to said second line coupler for receiving a signal on the second communication link and said single driver is coupled to said first line coupler for conducting the signal to the first communication link for allowing ~~that allows~~ data to be repeated without format change only from said second link to said first link.

30-31. (canceled)

32. (previously presented) The node as in claim 29, further comprising at least one payload interface.

33. (previously presented) The node as in claim 32, further comprising a device selected from a group consisting of sensors, actuators, and data terminal equipment connected to said payload interface.

34. (currently amended) The network as in claim 18, wherein each of said communication links connects only two of said nodes ~~and consists of only a pair of conductors~~.

35. (previously presented) The network as in claim 29, wherein each of said line couplers is connected, outside of said node, only to a respective one of said communication links and each

Appln. No. 09/349,020

Amd. dated April 27, 2005

Reply to Office Action of February 10, 2005

of said communication links consists of only a pair of
conductors.